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Chief Engineer's Report of the Survey of the
Greenville & French Broad Railroad

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CHIEF ENGINEER'S REPORT

Of the late Survey of the

Greenville & French Broad Railroad

FROM BUTT MOUNTAIN GAP TO SPARTANBURG.

ASHEVILLE, July 29, 1874.

To the President and Directors of the Spartanburg and Asheville, and Greenville and French Broad Railroad Companies:

GENTLEMEN:—In compliance with an order to survey the route for your road from Butt Mountain Gap to Spartanburg a party was organized and put in the field on the 15th of May.

Beginning at Butt Mountain Gap, the line was run as far as the School House Gap, near Mrs. McMinn's a distance of about two miles, nearly upon the line of Major McCalla's in 1859.

From the School House Gap to the Revis Gap, beyond Green River, considerable deviation was made from his line, and as the running was unsatisfactory on account of its indirectness, and being anxious to reach the more important points of the line beyond the Saluda Mountain; I traced Major McCalla's old route, varying but little from it as far as Howard's Gap in the Saluda Mountain, a distance of twelve and a quarter miles.

From Howard's Gap a line was run upon the southern face of Tryon Mountain to Thompson's Gap at the eastern end of the mountain, and thence to Columbus, a distance of five and eight tenth miles. Leaving

Columbus at the terminus of Peak street, the line crosses a prong of White Oak Creek, on Mr. Denton's farm, passing near the house, and thence over the spurs of Dishroom Mountain, crossing the Cowpen Ridge at the intersection of the Mill's Gap and Sandy Plains roads, and falls into the Columbus and Spartansburg road near Morrison's house on the ridge leading to Jackson's upper bridge on North Pacolet, and following the Spartanburg road a short distance, falls into the old route surveyed by Major McCalla near Mr. Anderson's house, from which place to Spartanburg very little deviation was made from his line, except at New Prospect church.

I was induced to run this line by Major McCalla's recommendation, made to the Company in 1859, of a temporary track on the south side of Tryon, where he assumed that with a distance of six miles he could overcome the difference between Howard's and Thompson's Gaps—seven hundred and six feet—at a cost of ten thousand dollars per mile, and relieve the company of the burden of building the line adopted between these two points, which passes around the northern sides of Tryon and

White Oak Mountains, a distance of eleven and one quarter miles at a cost of seventy one thousand dollars per mile.

I found the difference in elevation of the gaps seven hundred and six feet, but the distance unfortunately was but four and three quarter miles requiring uniform grade of one hundred and twenty two feet per mile to Columbus, assuming a cut of about sixty feet at Howard's gap. The consideration of this grade which on account of the curvature of the line would have required probably one hundred and forty feet per mile upon the straight portion of the line, to allow for a proper reduction upon the curves, involving an embankment of seventy feet on the lowest ground of Thompson's gap and long approaches, and the expensive crossings at the heads of Skyweka and Horse creeks and probably a short tunnel through the dividing ridge between them, led to the examination of a line plainly indicated by the topography of the country, presenting a hope of a more favorable descent of the Saluda Mountain. This line as seen, passes Howard's Gap with eighteen feet cutting at the summit, and turning to the right upon the slopes of the Warrior mountain, descends at the average rate of eighty seven feet per mile, to the North Pacolet River which it crosses at a distance of four and a quarter miles from the Gap, with the grade sixty feet above the water. From this point turning to the base of Melrose Mountain and leaving the immediate valley of the Pacolet, the line descending at the rate of eighty

feet per mile for five continuous miles presents few features of mountain work, and continuing three miles farther with an undulating grade crosses the South Carolina line near the Block House and falls into the Howard's gap road at a point half a mile beyond, where terminates the North Pacolet division twelve and a fourth miles in length.

The crossing of Vaughn's Creek is the most serious obstacle on this division. By increasing the cut at Howard's Gap and lengthening the line a little, a low crossing of Pacolet may be obtained with better curvature, and the grade from Howard's Gap reduced to eighty feet. Such a change, which should be made, instead of increasing the estimate of this division would reduce it, as the ravines would be crossed nearer their heads decreasing the embankment which is in excess, and throwing out the high crossing of Pacolet.

Leaving the terminus of the North Pacolet division the line passes over the summit of Bird's Mountain with a cut of thirty four feet, and following the Howard's Gap Road for a little more than two and a half miles, diverges to the right at Perry Davis' and crossing to the left of the road at the Glade Old Field, continues on that side leaving Dr. Landrum's house a quarter of a mile to the right, and crosses South Pacolet at an elevation of sixteen feet above the water. Leaving Pacolet the line is still on the left of the Howard's Gap road until it reaches Motloes Creek, before crossing which, it passes to the right and crossing Dean's mill-

pond touches the road again nearly a mile beyond, whence diverging to the right it passes round Windmill hill, and does not reach the Howard's Gap road until within one fourth of a mile of Calvary Church, from which point to Mr. Camps it follows the road and near his house passes to the right and descends to Lawson's Fork, crossing it fifteen feet above the water, and passing Camp Branch nearly a mile beyond at a height of thirty-eight feet above the water, falls into the Howard's Gap road at a point about four miles above Spartanburg, where it also connects with the line from Columbus, and continuing along the Howard's Gap road connects with the track of the Air Line R. R. Company, about one and three quarter miles from their depot, where terminates the South Carolina division, twenty three and four tenth miles in length. This division as shown by the estimates, presents very light work and will be improved on location.

A line leaving this and following the ridge to a crossing of South Pacolet farther down the stream, might be shorter and give more general facilities to the local traffic of the country adjoining it, is worthy examination.

I present herewith an estimate for grading of both these lines, with the cost also of the whole line from Asheville to Spartanburg. This estimate is for the first class work as shown by the figures. The cost of grading from Ashville to Butt Mountain Gap was ascertained by this party last fall. A comparison of the lines from Howard's Gap to Spartanburg show the line by Columbus to be one and eight tenth

miles shorter, but costing thirty three thousand dollars more—whilst its grades are one hundred and twenty two feet, and the other eighty feet per mile.

I have no hesitation in recommending the line by Warrior Mountain and North Pacolet. By putting in substantial trestles at the various crossings where embankments and costly masonry have been estimated, the cost may be reduced over one hundred thousand dollars. Reserving the Green River division for a future examination, I assume Maj. McCalla's estimate of it, deducting his probable allowance for iron. I hope with other grades to reduce his distance without increasing our cost.

All the estimates have been made for a road bed of sixteen feet in cuts and twelve feet on embankments, with curvature adapted to the ordinary gauge.

Should we adopt for the present, a narrow gauge, the estimate for grading will be considerably reduced, while the difference in the cost of iron would save to the company about seventeen hundred and fifty dollars per mile—or one hundred and thirty five thousand six hundred dollars, besides the saving in cost of rolling stock and subsequent operating expenses.

This survey of more than one hundred miles of line, including trial lines; was executed in two months, and I acknowledge here the faithful services of each member of the party. The immediate charge of the survey was committed to Capt. R. M. Clayton, to whom I am indebted for the

dispatch and efficiency of the work. I acknowledge here also the valuable services of Mr. William Camp, who freely gave us his time and knowledge of the country from North Pacolet to Spartanburg, and also on the lower line by New Prospect church; also the services of Mr. E. Clayton who was with the party during the whole survey, contributing to the facility of our operations in the field and in camp, by his acquaintance with the people and knowledge of the country through which we passed.

It is important to secure the right of way for the line before its final location.

The estimated cost of grading, ready for the track of the entire line from Asheville to Spartansburg, adopting the North Pacolet division from Howard's Gap to the South Carolina line, and using the trestles recommended and assuming no reduction of Major McCalla's estimate of the Green river division, is eight hundred and sixty-five thousand two hundred and fifty nine dollars.

Should the consolidated company determine to grade at once the S. C. division, and should the N. C. R. R. Company let to contract their line from Old Fort to Paint Rock, which we earnestly hope they soon will do, we can make the subscription of Buncombe and Henderson counties available for the grading of the upper French Broad division from Asheville to Butt Mountain, bringing the equipment of the line over the W. N. C. R. Road, and thus reduce the gap in

the connection by rail with Spartanburg, to a distance of twenty four miles—a gap that could not long confront the earnest united efforts of the friends of this great enterprise.

Respectfully your obedient servant,

T. COLEMAN,

Chief Engineer, G. & F. B. R. R. Co.

ESTIMATE OF LINE FROM ASHEVILLE
TO SPARTANBURG, BY WAY OF
COLUMBUS.

UPPER FRENCH BROAD DIVISION	
From Asheville to Butt mountain gap, 27 $\frac{1}{4}$ miles; grading, bridging and masonry	\$ 150,000 00
Average cost per mile	5,405 40
GREEN RIVER DIVISION	
From Butt mountain gap to Howard gap, 12 $\frac{1}{4}$ miles; grading, masonry and bridging	269,500 00
Average cost per mile	22,000 00
TRYON MOUNTAIN DIVISION	
From Howard's gap to Columbus, 6 miles; grading, bridging and masonry	343,680 00
Average cost per mile	57,280 00
PACOLET DIVISION	
From Columbus to Spartanburg, 38 miles; grading, masonry and bridging	238,076 00
Average cost per mile	6,502 71
Total	\$1,000,756 00

ESTIMATE OF COST FROM ASHEVILLE
TO SPARTANBURG BY WARRIOR
AND NORTH PACOLET LINE.

UPPER FRENCH BROAD DIVISION	
From Asheville to Butt mountain gap, 27 $\frac{1}{4}$ miles; grading bridging and masonry	\$ 150,000 00
Average cost per mile	5,405 40
GREEN RIVER DIVISION	
From Butt mountain gap to Howard's gap, 12 $\frac{1}{4}$ miles; grading, masonry and bridging	269,500 00
Average cost per mile	22,000 00
NORTH PACOLET DIVISION	
From Howard's gap to Bird's mountain, 12 $\frac{1}{4}$ miles; grading, masonry and bridging	458,082 00
Average cost per mile	39,394 46
SOUTH CAROLINA DIVISION	
From Bird's mountain to Spartanburg, 23.4 miles; grading, masonry and bridging	89,973 00
Average cost per mile	3,844 57
Total	\$ 967,545 00
Amount deducted for substitution of trestles	102,265 00
Total cost	\$ 865,280 00

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